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NATIONAL COMMUNICATIONS FROM PARTIES INCLUDED IN ANNEX I TO THE CONVENTION

ONGOING ACTIVITIES ON REPORTING AND REVIEW OF GREENHOUSE GAS INVENTORIES IN PARTIES INCLUDED IN ANNEX I TO THE CONVENTION (IMPLEMENTING DECISIONS 3/CP.5 AND 6/CP.5)

Progress report on the implementation of decision 6/CP.5

Note by the secretariat

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I. INTRODUCTION

A. Mandate

1. By its decision 6/CP.5, the Conference of the Parties (COP) adopted guidelines for the technical review of greenhouse gas (GHG) inventories[1] from Parties included in Annex I to the Convention (hereinafter referred to as "the UNFCCC review guidelines") for a trial period covering inventory submissions due in 2000 and 2001 (see FCCC/CP/1999/7).

2. The COP requested the secretariat:

(a) To conduct initial checks of the GHG inventories from Parties included in Annex I to the Convention (Annex I Parties);

(b) To conduct an annual synthesis and assessment of the GHG inventories from Annex I Parties;

(c) To undertake individual reviews of GHG inventories for a limited number of Annex I Parties using three approaches (desk reviews, centralized reviews and in-country reviews);

(d) To produce a report on the technical reviews, assessing, *inter alia*, the advantages and disadvantages of the different approaches for the individual reviews, including human and financial resource requirements, for consideration by the Subsidiary Body for Implementation (SBI) as soon as practicable after the end of the trial period.

3. The COP decided to initiate the individual review of inventories for all Annex I Parties in 2003. For this purpose, it requested the SBI to evaluate, on the basis of the secretariat's report, the experiences during the trial period, with a view to adopting revised guidelines for the technical review of inventories at its eighth session.

B. Scope of the note

4. This note is an interim report providing information on experiences with the technical review process, including the results of the initial checks, the synthesis and assessment of GHG inventories, and individual reviews of GHG inventories from Annex I Parties. It also provides an overview of the activities planned for the second part of the year 2001 and a brief description of the development of the database used for storage, processing and presentation of the GHG inventory data.

C. Possible action by the SBI

5. The SBI may wish to take note of this interim report when it considers revisions of the UNFCCC review guidelines mentioned in paragraph 3. The SBI may wish to refer aspects of this document to the SBSTA for its consideration and advice. The SBI may wish to provide

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[1] By its decision 3/CP.5, the COP adopted the UNFCCC reporting guidelines on annual inventories for the preparation of national communications by Parties included in Annex I to the Convention (hereinafter referred to as "the UNFCCC reporting guidelines"), which include the common reporting format and the national inventory report. The COP decided that Annex I Parties should use these guidelines for reporting inventories due by 15 April each year, beginning in 2000 (see FCCC/CP/1999/7).

additional guidance to the secretariat on the technical review of GHG inventories from Annex I Parties and, in particular, on its future planned work.

II. TECHNICAL REVIEW OF GREENHOUSE GAS INVENTORIES

A. Background

6. The purposes of the technical review of Annex I Parties' GHG inventories are, *inter alia*, to ensure that the COP has adequate information on GHG inventories and GHG emission trends, and to assist Annex I Parties in improving the quality of their GHG inventories.

7. In accordance with the UNFCCC review guidelines, the technical review of the GHG inventories from Annex I Parties comprises three complementary stages:

(a) An initial check of annual inventories;

(b) A synthesis and assessment of annual inventories;

(c) Individual reviews of greenhouse gas inventories.

8. Table 1 provides an overview of the GHG inventories from Annex I Parties submitted to the secretariat in 2000 and in 2001 (by 31 July). The submissions from Annex I Parties in the common reporting format (CRF) were used as the basis for the three stages of the technical review. Submissions based on earlier reporting guidelines (e.g. decision 9/CP.2) were not considered at any stage of the review process.

Table 1. Greenhouse gas inventory submissions in the years 2000 and 2001

	2000 (by 31 December)	2001 (by 31 July)
Total submissions	**32**	**32**
Submissions using the CRF	*24* [2]	*30*
Submissions accompanied by national inventory reports	*8*	*15*

9. In response to the request contained in decision 6/CP.5, the secretariat has conducted initial checks and a synthesis and assessment of all GHG inventories submitted in 2000 by Annex I Parties using the CRF, and has coordinated individual reviews of GHG inventories through one desk review (three GHG inventories), one centralized review (six GHG inventories) and four in-country reviews. The GHG inventories of eight Parties (Australia, Canada, Hungary, Japan, the Netherlands, New Zealand, the United Kingdom of Great Britain and Northern Ireland and the United States of America) underwent individual reviews. The secretariat has also conducted initial checks and has started the synthesis and assessment of the GHG inventories submitted in 2001.

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[2] One Annex I Party provided only summary tables 1 and 2 of the CRF for all required years since 1990. This submission was not considered at any stage of the review process.

B. Initial checks of annual inventories

1. Background

10. The first stage of the technical review process consists of an initial check of the national inventory submission, and in particular, the data electronically submitted in the CRF. The UNFCCC review guidelines describe the scope of the initial checks. In accordance with the UNFCCC review guidelines, the results are to be published on the UNFCCC web site as a status report for each Annex I Party, mainly in tabular format, within four weeks of the date of receipt of the submission by the secretariat. The format of the status reports was finalized in May 2000 with the assistance of experts from the UNFCCC roster of experts (see document FCCC/SBI/2000/14).

2. Approach

11. The secretariat completed the initial checks of 23 GHG inventories submitted in 2000 and 27[1] GHG inventories submitted in 2001 by Annex I Parties using the CRF. All status reports were published on the UNFCCC web site (status reports for the 2000 submissions: http://www.unfccc.int/resource/ghg/statrep2000.html and status reports for the 2001 submissions: http://www.unfccc.int/resource/ghg/statrep2001.html).

12. Whilst it was intended that the initial checks should be virtually fully automated in the future, at this stage it was necessary to perform most of the checks and cross-checks manually for both the 2000 and 2001 submissions. However, it is possible to conduct some automatic checks on electronic submissions (see paragraph 63) using a software tool which performs simple consistency checks. Without having tested the final version of this software tool, it is too early to assess any time savings that would result from such an automated procedure. However, from the experience gained during the trial period, it is safe to assume that any such software tool will not completely eliminate human intervention at this stage of the review process. This is because the status reports include information (such as a brief description of the information provided in the national inventory report (NIR), an assessment as to whether Parties provided explanations for differences in the CO_2 emissions from fuel combustion using the reference and the sectoral approach) and comments for individual CRF tables that can be incorporated only after manual checks of the GHG submissions have been performed.

3. Timing

13. In accordance with the UNFCCC review guidelines, the status reports should be published on the UNFCCC web site within four weeks from the date of submission to the secretariat. In 2000, the average time that elapsed between when a Party submitted an inventory and when the secretariat posted a status report was approximately 15 weeks. The maximum time was 22 weeks. The main reasons for the delays were:

(a) The format of the status reports was not finalized until after the workshop in May 2000, as mentioned in paragraph 10;

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[1] The finalization of two more status reports, submitted in mid-end-July 2001, was pending at the time this report was written.

(b) The officers responsible for the status reports for the 2000 submissions were involved in the preparation of documents and a workshop on issues relating to Articles 5, 7 and 8 of the Kyoto Protocol (March 2000) and preparation for the twelfth session of the subsidiary bodies (31 May – 11 June 2000).

14. The length of time needed for the finalization of status reports decreased significantly in 2001, averaging 6.5 weeks. However, this is still 2.5 weeks longer than the time prescribed in the UNFCCC review guidelines.

15. Table 2 provides information on the elapsed time associated with the initial check of the 2001 GHG inventories. The actual time required for the secretariat to check each GHG inventory submission and to prepare the corresponding status report averages between 1 and 1.5 working days.

Table 2. Information on the timing of activities relating to the initial check of the 2001 greenhouse gas inventory submissions

	Number of weeks[4]		
Activities	**min.**	**max.**	**average**
Initial check and preparation of draft status report	2	4[5]	3
Response of Parties (11 out of 27 Parties)	<1	3	2
Response of secretariat to Parties' comments	<1	1	<1

16. Eleven Annex I Parties provided comments on their status reports. Three of these submitted an updated/revised version of their CRF. For these Annex I Parties, the secretariat prepared a second status report based on the revised CRF submission and sent it back to the Parties for their comments. As a result the final versions of these three status reports were published eight, nine and 11 weeks after the original date of submission. These circumstances could be considered further in the possible revision of the UNFCCC review guidelines after the trial period.

C. Synthesis and assessment of annual inventories

1. Background

17. The second stage of the technical review process consists of the synthesis and assessment of the GHG inventories submitted by Annex I Parties using the CRF. In accordance with the UNFCCC review guidelines, the purposes of the synthesis and assessment are to facilitate the

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[4] The weeks include non-working days (weekends, public holidays etc.).

[5] This does not include the submission of one Annex I Party, which was received approximately seven weeks before the due date, but was processed after 15 April 2001. This was because from February until mid-April 2001, the secretariat officers were involved in the finalization of the synthesis and assessment report for the 2000 GHG inventory submissions. This activity took priority over the status reports since the synthesis and assessment report had to be sent to the Annex I Parties which were to be reviewed during the third stage (individual review) for their comments, prior to the scheduled dates of the individual reviews (see sections C and D of this note).

consideration of inventory data and other information across Parties, and to identify issues for further consideration during the individual review of inventories.

18. The results of this stage of the technical review should be published on the UNFCCC web site as a synthesis and assessment report, divided into two sections and an addendum. Section I should consist of a set of data tables to allow comparison of inventory information across Parties, and section II should include a preliminary country-by-country analysis for all Annex I Parties. The addendum should contain tables and graphs based on Annex I Party inventory data.

2. Approach

19. The secretariat completed the synthesis and assessment of the 2000 GHG inventory submissions in two phases with the assistance of experts invited to participate in the second phase.

Phase I

20. During the first phase, which took place from 19 February to 3 March 2001, the secretariat compiled the information provided by Annex I Parties using the CRF and prepared a draft format for the synthesis and assessment report, which included section I and section II of the report. The report does not include an addendum. However, inventory data, in both tabular and graphical format, were prepared by the secretariat in 2000 and were published in FCCC/SBI/2000/11, Corr.1 and Corr.2 and FCCC/SBI/2000/INF.13.[6] These documents contain information from all Annex I Parties using the latest available GHG inventory submissions, irrespective of the year when they were submitted and of the format used (CRF or IPCC standard reporting tables). In order to avoid duplication in the publication of data, these documents were used as a substitute for the addendum to the synthesis and assessment report of the 2000 GHG inventories.

21. To facilitate analysis of the inventory data, the secretariat considered, for each individual Party, those source categories that are *key sources* in terms of their absolute level of emissions, applying the tier 1 level assessment as described in chapter 7 of the Intergovernmental Panel on Climate Change (IPCC) *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories* (hereinafter referred to as the IPCC good practice guidance). For the identification of *key sources*, the land-use change and forestry sector was excluded from the calculations, since good practice guidance has not, as yet, been elaborated for this sector. No other criteria for identifying *key sources* as described in the IPCC good practice guidance, such as trend assessment, were considered for the 2000 GHG inventory submissions.[7] A list of the *key sources* for the 2000 GHG inventory submissions has been published on the UNFCCC web site (see http://www.unfccc.int/resource/ghg/s_a2000.html).

22. To detect potential anomalies in the inventory data, a preliminary statistical analysis of the submitted data was performed. This work concentrated on the analysis of implied emission factors from *key sources* across Annex I Parties in order to detect irregularities in the data with

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[6] These documents are produced on an annual basis in response to the mandate by the COP included in decision 6/CP.3.

[7] For the synthesis and assessment of the 2001 GHG inventory submissions, key sources were calculated using both level and trend assessment.

the assistance of statistical tools and by making a number of simplifying assumptions about the probability distribution of the data samples considered. The detection of any such statistical irregularities does not automatically mean that the data submitted for a particular source category are problematic. It merely indicates that one or more Parties have submitted values that do not lie within statistical bounds determined by the values submitted by all other Parties, and they may reflect national circumstances. In this sense, irregularities serve as descriptive parameters which can be used by experts to consider in more detail a national profile of emission and activity data.

23. For *key sources*, implied emission factors and other methodological information were compared across Parties and, where appropriate, against default emission factors recommended by the IPCC. For some source categories, activity data reported by Parties were compared with available data from international data sources, such as the United Nations (UN), the International Energy Agency (IEA), and the Food and Agriculture Organization statistics.

24. An assessment of emissions trends and implied emission factors from 1990 to 1998 was performed where possible. Furthermore, the inventory data submitted in 2000 were compared with data in previous inventory submissions. Where possible, the national inventory report, or any other accompanying textual information, was used to assess the consistency of the provided information. Specific data checks were also carried out to verify the consistency of the reported data, and to detect omissions and any other problems relating to the use of the CRF.

Phase II

25. The second phase of the synthesis and assessment took place from 5 to 9 March 2001 in Bonn, with the participation of six national inventory experts[3] from the UNFCCC roster of experts and one expert from an international organization. The work of the experts was based on the outcome of phase I of the synthesis and assessment prepared by the secretariat. Their main tasks were:

(a) To check and verify the contents of the draft of section I of the synthesis and assessment report;

(b) To check and verify the findings included in the preliminary country-by-country analysis of section II of the report and, where appropriate, to identify additional findings on issues needing further consideration during the third stage of the technical review (individual reviews).

26. Since this was the first time that a synthesis and assessment report had been prepared, the experts were also asked to provide advice on the structure of the tables to be included and the general outline of the report. The experts provided a number of useful suggestions which were integrated into the final version of the report. In addition, they commented on how the technical work carried out by the secretariat during the first phase could be undertaken to facilitate their work further.

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[3] The criteria used for the selection of the experts for all review activities are outlined in paragraph 50.

Preparation of the final report

27. Section I of the draft synthesis and assessment report was sent to Annex I Parties for their comments, together with the corresponding preliminary findings on the individual Party's GHG inventory (section II). Comments from Parties in response to the findings have been included in the final version of the report (FCCC/WEB/SAI/2000), which was published on the UNFCCC web site (http://www.unfccc.int/resource/ghg/sai2000.pdf). The report contains a total of 200 pages, out of which 50 pages are tables and 130 pages are comments on individual inventories.

3. Timing

28. The work on the synthesis and assessment report for the data submitted in 2000 started in February 2001, and the final report was published on the UNFCCC web site almost five months (21 weeks) later in mid July 2001. Table 3 provides an analysis of the time taken and the professional staff resources required to complete the activities under phase I and II of the synthesis and assessment of the GHG inventories for the year 2000.

29. As shown in Table 3, different activities required different staff resources depending on the volume of work to be undertaken. For the synthesis and assessment of the 2000 GHG inventory submissions, the most time-consuming activity was the revision of the synthesis and assessment report based on the comments of the experts who participated during the second phase. The main reason for this was the need to restructure a number of tables of section I to allow the inclusion of additional information for each source category, and the need to perform a consistency check of section II to ensure that, as far as possible, all sectors were fully covered and treated in a coherent way across all Annex I Parties. In addition, because of software limitations during the development stage of the GHG database, manual checks were also performed to ensure that the data in the tables of section I correctly reflected the data submitted by the Annex I Parties.

30. The secretariat sent section I and the relevant part of section II of the synthesis and assessment report to all 23 Annex I Parties for comments. Three Parties provided comments on section I within four to seven weeks and 13 Parties provided comments on section II within one to five weeks.

Table 3. Timing of activities and staff resources for completing the synthesis and assessment of the greenhouse gas inventories submitted in 2000

Phases - Activities	Number of weeks[9]	Staff resources[10] (person-weeks)
Phase I	***2***	***12***
Preparation of preliminary sections I and II of the report	2	
Phase II	***19***	***40***
Experts' meeting	1	
Revision of section I and section II of the report (including preliminary editing)	5-11	33[11]
Parties' comments on sections I and II (13 Parties)	1-7	
Incorporation of each Party's comments in the final version of the report	~1	3
Finalization of the report (including final editing and proofreading)	2	4[11]
Total	***21***	***52***

31. As mentioned in paragraph 23, activity data submitted by Annex I Parties using the CRF were compared against statistical information published by international organizations. For the 2000 GHG inventory submissions, such comparisons were made using activity data reported in the CRF for the year 1998 and statistical data published by international organizations for the same year. However, for the synthesis and assessment of 2001 GHG inventory submissions (June-July 2001), similar comparisons for the year 1999 for some economic sectors (particularly industrial production) were not possible because of the non-availability of published data from international organizations.[12] In general, this information from the above-mentioned organizations has a two-year lag and usually becomes available during late autumn. Such delays limit the comparisons that can be performed.

D. Individual review of greenhouse gas inventories

1. Background

32. The third stage of the technical review process consists of the review of individual GHG inventories submitted by Annex I Parties. In accordance with the UNFCCC review guidelines, the purpose of this stage of the review is to provide for a periodic examination of the inventory

[9] The weeks include non-working days (weekends, public holidays etc.).
[10] The staff resources refer only to Professional category staff members.
[11] Staff resources for editing are not included.
[12] For the synthesis and assessment of the 2001 GHG inventories, comparisons were made using the 1998 activity data in the CRF and 1998 published statistical data, where such data for 1999 were not available.

estimates and the procedures and methodologies used in the preparation of inventories. The results of this examination are to be communicated to the Parties. This stage of the review should be carried out by teams of experts nominated to the UNFCCC roster, coordinated by the secretariat. The UNFCCC review guidelines describe what the individual reviews should cover (national inventory submission, supplementary material submitted by the Parties and, as appropriate, previous inventory submissions) and state that the team of experts should produce an individual review report.

33. In accordance with the mandate by the COP, during the trial period three approaches for the individual review should be tested: sending inventory information to experts (desk review), expert's meetings in a single location (centralized review) and in-country visits of experts. Table 4 provides an overview of the individual review activities, based on the 2000 GHG inventory submissions, that were carried out during the first part of the year 2001. Due to time constraints, only one desk review and one centralized review were conducted in the first part of the year 2001. More of these activities are planned before the end of this calendar year (see paragraph 70 (b)).

Table 4. Individual reviews of selected greenhouse gas inventories submitted in 2000 by Annex I Parties

	Information submitted		Individual review activity		
Party	**CRF**	**NIR**	**Desk review**	**Centralized review**	**In-country review**
Australia	1990-1998	✔		✔	✔
Canada	1990 and 1998	✔		✔	
Hungary	1998			✔	
Japan	1990-1998			✔	
Netherlands	1990-1998		✔	✔	
New Zealand	1990-1998	✔	✔	✔	✔
United Kingdom of Great Britain and Northern Ireland	1990-1998	✔			✔
United States of America	1990-1998	✔	✔		✔

34. In-country reviews were conducted only for those Annex I Parties which volunteered for such an individual review. For the desk and the centralized reviews, inventory submissions with different levels of completeness were selected (for instance, submissions with and without NIR, submissions with complete CRF time series and submissions with CRF for one or more years).

35. The GHG inventory submission of New Zealand was reviewed using all three approaches, while the GHG inventory submissions of Australia, the Netherlands and the United States of America were reviewed using two out of the three approaches. The purpose of this was to facilitate the identification of relative advantages and disadvantages of the different review

approaches and to facilitate an assessment of the three approaches as mandated by the COP (see paragraph 2 (d)).

2. National experts and lead authors

36. For all individual review approaches, the secretariat identified national experts from the UNFCCC roster for each of the inventory sectors (*Energy, Industrial Processes, Agriculture, Land-Use Change and Forestry* and *Waste*), using the criteria described in paragraph 50, and invited these experts to participate with the agreement of their national focal points. For the desk and the centralized reviews, two experts per sector were invited, while for the in-country reviews, in general, one expert per sector was invited.

37. To facilitate the work of the expert review teams the idea of "lead authors" was introduced for the first time in all individual review activities. For this purpose, two members of each review team (one from a non-Annex I Party and one from an Annex I Party) were assigned to be "lead authors". They had to coordinate the work of the review team, with the assistance of the secretariat, and the drafting of the review report integrating the input of the other team members. The ultimate responsibility for the content and the ownership of the final report remained with the whole review team.

38. Additional tasks for the "lead authors" included:

(a) Coordination of all additional questions sent to the Party through the secretariat;

(b) Helping the reviewers and/or the Party in the case of questions/problems;

(c) Reviewing the whole inventory, particularly the NIR, for a general assessment of its conformity with the UNFCCC reporting guidelines;

(d) Drafting a 2-3 page overview section;

(e) Maintaining constant contact with the other reviewers to monitor the progress of the review.

3. Approach

Guidance for experts

39. One of the recommendations of the experts who participated in the workshop in May 2000 (see document FCCC/SBI/2000/14) was that the secretariat should develop general guidance on the procedures to be followed by the expert review teams in order to maintain consistency in the review of different Parties' inventories.

40. Three experts (one from a non-Annex I Party and two from Annex I Parties) assisted the secretariat in the development of a preliminary guidance for the individual reviews. This guidance provides a set of instructions which experts are encouraged to follow while reviewing the GHG information of a particular Party, and includes the following elements:

(a) General Guidance: General background information for the reviewers and detailed explanations of all the materials and documents provided in the review package that the secretariat should prepare and send to the experts prior to the review;

(b) Description of the review report: Outline of the structure of the final written document to be completed by the review team under the coordination of the lead authors;

(c) Review checklist: A sector oriented "tool" for reviewers to help them identify specific areas for assessment;

(d) Additional instructions for the lead authors: Identification of those tasks which do not fall under any specific sector or source category review (such as overall assessment of the national inventory report and coordination of questions to the Party).

41. When developing this draft set of instructions, some elements of the IPCC good practice guidance were taken into account, because it was felt that it would serve as a reliable guide for designing the individual review of each IPCC sector, as well as other stages of the review. However, for the review of the 2000 GHG inventories, no assessment was made as to whether Annex I Parties had used the IPCC good practice guidance, since in accordance with the conclusions of the twelfth session of the SBSTA (FCCC/SBSTA/2000/5, paragraph 40 (c)) the IPCC good practice guidance should be applied by Annex I Parties, to the extent possible, for inventories due in 2001 and 2002 and should be used for inventories due in 2003 and beyond. Annex I Parties with economies in transition may phase in the IPCC good practice guidance two years later than other Annex I Parties.

42. The preliminary guidance was distributed to all experts participating in the desk review, the centralized review and the in-country reviews, and the secretariat received positive feedback on its usefulness. The guidance will be further developed taking into account comments and proposals from the experts.

Support by the secretariat

43. The secretariat prepared and sent to all members of the review teams the relevant information for each review activity in electronic format (CD-ROM). For each GHG inventory to be reviewed, the CD-ROM contained the following material:

(a) The submission of the Party including the CRF for all years reported, the national inventory report, if submitted, and any other supporting data submitted by the Party to the secretariat;

(b) Section I and the relevant part of section II of the synthesis and assessment report, the comments of the Party to the findings included in the synthesis and assessment report and documents FCCC/SBI/2000/11 and FCCC/SBI/2000/INF.13 which contain comparisons of emissions data across all Annex I Parties in tabular and graphical format;

(c) The preliminary guidance described in paragraph 40;

(d) The status report for the GHG inventory submission;

(e) The analysis of *key sources* performed by the secretariat, as explained in paragraph 21;

(f) The report on the in-depth review of the latest national communication of the Party;

(g) Document FCCC/CP/1999/7 containing the UNFCCC reporting and review guidelines.

44. An outline for drafting the review reports was developed during the first centralized review and was refined during the in-country reviews of New Zealand and the United States of America. The secretariat distributed this outline to the members of the desk review team and to the Australian in-country review team.[13]

45. The secretariat provided experts with technical advice, when necessary, and advice on the elements included in the UNFCCC reporting and review guidelines, in the reports prepared during the previous stages of the review process (status reports and synthesis and assessment report) and in other official UNFCCC documents. It also assisted the work of the review teams by creating a brief "work plan" for the review activity, including a timetable for the review and finalization of the report. Drawing upon its experience with the in-depth review of the national communications, the secretariat assisted in making the review reports coherent, provided drafting suggestions and editorial support.

4. Timing

46. During the first part of this calendar year, the time set aside for the review of the GHG data by expert review teams was: four weeks for the desk review (three GHG inventories), one week for the centralized review (six GHG inventories) and one week for each of the in-country reviews. Suggestions relating to the duration of these activities as well as the number of GHG inventories considered will be provided in the report of the secretariat after the trial period.

47. To the date of publication of this note, the review reports for New Zealand (desk review and in-country review) and for the United Kingdom of Great Britain and Northern Ireland (in-country) have been finalized and published on the UNFCCC web site (http://www.unfccc.int/resource/ghg/indrev2000.html). The remaining review reports are expected to become available in September 2001.

48. Due to the limited experience with the finalization and publication of the individual review reports, no assessment of the time implications will be presented in this note. More information on this matter will be provided in the report of the secretariat after the trial period. However, from the experience gained so far, the additional tasks undertaken by the lead authors (see paragraph 38) have significantly increased their workload and have resulted in some delays in the finalization of the review reports. In order to enhance the quality of the review activities and to reduce the burden on the lead authors, the secretariat will invite one or two more experts to take part in each future review activity (see paragraph 71).

E. Participation of national experts in all review activities

49. The completion of the synthesis and assessment and the individual reviews (desk, centralized, in-country) would not have been possible without the dedication and hard work of national experts and the support of all Parties for the technical review of the GHG inventories from Annex I Parties.

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[13] The report on the in-country review of the United Kingdom has a slightly different structure from other reports, since the outline was prepared after this in-country review was completed.

50. The criteria that were used for selecting national experts (nominated to the UNFCCC roster of experts by Parties to the Convention) for the various activities were:

(a) Experience and expertise; *inter alia*:

(i) Experience in the preparation of national GHG inventories;

(ii) Expertise in the GHG inventory sectors included in the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories* (*Energy*, *Industrial Processes*,[14] *Agriculture*, *Land-Use Change and Forestry* and *Waste*);

(iii) Participation in the development of the IPCC *Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories*;

(iv) Participation in the in-depth review of national communications;

(b) Wide geographical representation.

51. For all review activities relating to the GHG inventory submissions of the year 2000, 47 national experts were involved. The distribution of these experts by review activity and by Annex II Parties, Annex I Parties undergoing the process of transition to a market economy (EIT), non-Annex I Parties and experts from international organizations is provided in table 5.

Table 5. Distribution of national experts who participated in the technical review of the greenhouse gas inventories submitted in 2000

Activity	Annex II Parties	EITs	non-Annex I Parties	International organizations
Synthesis and assessment	3	1	2	1 (IEA)
Desk review	4	2	4	-
Centralized review	4	1	4	-
In-country reviews	10	3	8	-
Total number of experts	**21**	**7**	**18**	**1**

52. In addition to the national experts mentioned above, three more experts (one from a non-Annex I Party and two from Annex I Parties) assisted the secretariat in the development of a preliminary guidance for experts participating in the individual reviews of inventories, as explained in paragraph 40, thus bringing the total number of experts involved during the first part of the year 2001 to 50.

53. The unfamiliarity with the UNFCCC reporting guidelines (CRF and NIR) of some national experts (in particular from non-Annex I Parties, but also from some Annex I Parties) participating in various review activities, was one of the major problems during this first part of

[14] The experts dealing with the Industrial Processes sector were also responsible for the *Solvents and Other Products Use* sector, which, in general, does not constitute a major source of GHG emissions.

the trial period. From the experience gained so far, there is clearly a need to train experts prior to their participation in review activities. This need will become more obvious in the future, since the COP has decided that all GHG inventories from Annex I Parties will be reviewed on an annual basis starting in 2003. The implementation of this decision means that potentially more than 100 national experts could be involved every year in the review activities.

F. Resource requirements

1. Participation of national experts

54. In accordance with its current practice, the secretariat funded 19 national experts[15] from non-Annex I Parties and EITs covering daily subsidence (DSA) and travel expenses. All other national experts were funded by their governments or organizations. The total amount provided by the secretariat for the above activities was approximately $US 60,000. The desk review did not have any funding requirements for travel and DSA, since the national experts worked in their own countries.

55. An additional resource component, which will not be analysed in the context of this note, is the time (either personal or during normal working hours) that the experts dedicate for the review activities either at home or in a different country. Any financial burden as a result of their participation is borne by the experts or their employers and not by the secretariat and it is difficult to make an assessment of any such implications due to differences in the salary scales of experts from different countries and with different work experience. The experts have to spend a considerable amount of time on:

(a) Preparation before the review activity (at home);

(b) Reviewing the GHG inventory data (either at home or in a different country);

(c) Finalizing the review report(s) (at home).

56. Furthermore, it has been brought to the attention of the secretariat that, in order to maintain contact with other members of the review team, some experts found it sometimes preferable to communicate using the telephone rather than e-mail or facsimile. Again, the secretariat is not in a position to make an assessment of any financial implications relating to this issue.

57. Without having completed the trial period, it is not possible to provide estimates for the resource implications of the different review approaches nor for the time associated with the preparatory work and the finalization of the review reports (only three review reports have been finalized). More information on this issue will be provided in the report of the secretariat after the end of the trial period.

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[15] The funded national experts were those who participated in the synthesis and assessment (Bonn, Germany), in the centralized review (Bonn, Germany) and the four in-country reviews (Australia, New Zealand, the United Kingdom of Great Britain and Northern Ireland and the United States of America).

2. Secretariat support

58. To assist in the implementation of decisions 6/CP.5 and 3/CP.5 and to provide the necessary support to the Parties and the national experts, a working team on GHG inventories was formed within the secretariat comprising staff members, in the Professional and General Service categories, from the Implementation and the Science and Technology Programmes. The tasks of this team are:

(a) To conduct the initial checks and prepare the status reports for all CRF submissions;

(b) To conduct phase I of the synthesis and assessment of GHG inventories and prepare the synthesis and assessment report;

(c) To coordinate the work of the national experts who participate in the synthesis and assessment, desk reviews, centralized reviews and in-country reviews;

(d) To develop the structure of a new GHG database, to import data submitted by Annex I Parties using the CRF into this new database and to develop software tools for retrieving and processing these data (see section G below);

(e) To provide technical assistance, when necessary, to the expert review teams and assistance in the use of the UNFCCC guidelines and other official documents;

(f) To provide general support services through, *inter alia*, making arrangements for all review activities, sending information to experts and formatting reports.

59. Eighteen staff members of the secretariat participated to different extents (full and part-time) in the work. As shown in table 6, 10 are from the Professional category, including managers from each of the two programmes who worked together to coordinate the team, and eight from the General Service category, including database specialists.

Table 6. Staff resources during the first part of the year 2001

Category	Full time staff	Part-time staff	Total staff resources
Professional	5	5	6.5
General Service	5	3	6
Total	***10***	***8***	***12.5***

60. Taking into account that the members of the team have additional duties and responsibilities within the secretariat and that they therefore provide assistance on a part-time or ad hoc basis depending on the workload at different stages of the review process, actual staff resources for the first part of the year 2001 were 12.5, of which 6.5 were in the Professional category (five full-time and five part-time) and six in the General Service category (five full-time and three part-time). The commitment of this level of resources has only been possible because work on other methodological issues was held in abeyance during this period and because work on the reviews of national communications from Annex I Parties was in a quiescent phase pending receipt of the third national communications.

61. In addition to the above, the secretariat made available for the technical review process the following resources: document editing support (approximately 24 person-days – preliminary editing and final editing, including proofreading), administrative support, IT support, facsimile facilities and funds to cover postage and packaging of material sent to the national experts. The financial implications of all these resources are not assessed in the context of this note.[16]

G. Database and software development

62. As mentioned in paragraph 58 (d), one of the tasks of the secretariat working team on GHG inventories is to develop and make operational a new GHG database and to develop software tools for retrieving data from the database for the purpose of the review process. The data processing has, so far, focused on the preparation, importing, validation and consistency checking, retrieving and processing of data. The plans for future work on the database and the software tools developed by the secretariat are described in paragraph 76.

1. Import preparation

63. The import preparation consists of three tasks:

(a) Registry process: Compilation of incoming documents and country remarks, checking for completeness and confirmation of receipt of inventories;

(b) Preparation of a pre-check report: This report is generated automatically before importing data into the database and provides an overview of the inventory submission, detailed information on the CRF tables submitted including the number of numerical and non-numerical values, added/removed tables, information about imbedded formulas, comments;

(c) Preparation of the CRF for import: Verification of administrative information, separation of standard formatted CRF tables for the automated import from non-standard tables to be imported via advanced import methods, and identification of critical data configurations.

2. Importing data into the database

64. Importing data into the database is executed through the use of an interface software tool which has the following capabilities:

(a) Standard import: Automatic import of standard non-modified CRF tables, frame by frame uploading of the data from the Excel CRF application, detection of country-specific categories, screening of cells for import, attributing parameters to values, detection of comments, shaded cells, highlighted cells, special units, descriptions, etc. and interactive manipulation functions of the input grid;

(b) Recalculation import: Automatic import of recalculation tables (table 8(a) of the CRF), detection of recalculation year(s), screening of all cells and interactive manipulation functions of the input grid;

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[16] This experience was reflected in the proposed programme budget of the secretariat for the period 2002-2003 (FCCC/SBI/2001/5 and Add.1).

(c) Pattern creator and standard definition check: Creation of importation templates for modified CRF tables and adjustments to standard importation templates, such as definition of import area layout, selecting cells to be imported, selecting cells' parameters (category, gas, unit, measure, parameter, etc.), selecting inter-cell relations (description – unit – value), selecting shadings, headers, country-specific categories;

(d) Quick import: Automatic bulk importation of tables of the CRF, automatic uploading of files and screening of all cells.

65. The interface software tool also has the ability to store administrative information using a history log providing the current status of the import procedure, and tracking who imported or changed what and when, etc. Some vital statistics of the GHG database are presented in table 7.

Table 7. Statistics of the greenhouse gas database

	2000 submissions	**2001 submissions**	**Cumulative total**
Number of Parties which submitted inventories in CRF format	24	30	
Number of inventory years submitted in CRF format	84	157	
Total number of values[17]	~300,000	~553,000	~853,000
Average number of values per one inventory year per Party[18]	~3,570	~3,760	~3,690
Average percentage of completeness of inventories	42 %	43 %	42.7 %
Size of the database	65 MB	85 MB	150 MB
Potential total number of values if all Parties submit all inventory years with 100 % completeness (size of the database)	~4,500,000[19] (600 MB)	~5,200,000[20] (720 MB)	(1320 MB)

66. The potential size of the database, indicated in table 7, is only an indicative figure based on the existing reporting requirements (CRF for all years up to the last but one year prior to the year of submission). Possible future revisions of the UNFCCC reporting guidelines could either decrease the volume of the reported information, by reducing duplicate information, or increase it, by requesting additional information identified by the application of the IPCC good practice guidance.

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[17] The term "values" includes numerical data and indicators (NA, NE, NO, IE, O, C).

[18] The average number was estimated by dividing the total number of values by the number of inventory years submitted in CRF.

[19] 39 Parties x 9 years x 12,800 values.

[20] 40 Parties x 10 years x 13,000 values.

3. Import validation and consistency checks

67. The import validation and consistency checks are performed through checking for redundant/duplicate data, performing comparisons of data in the current submission with previous submission(s), checking the consistency of subtotals in all CRF tables, checking the internal relationships and imbedded formulas in all CRF tables, and screening implied emission factors. If data accounting does not fit the national totals, then more in-depth sectoral key values are assessed. A software tool for calculating *key sources* (see paragraph 21) was developed and was also used for validating the imported data. Reports are produced on inventory country-specific source and sink categories, units, measures and parameters and on any comments included by Parties in the CRF tables.

4. Retrieving and processing data

68. A software tool (provisionally referred to as "CRF data locator") was designed to retrieve, manipulate and analyse data from the CRF database. The program, which is still under development, has an easy-to-use interface allowing data to be viewed in a flexible tabular form with run-time grouping and sorting. It has a standard clipboard "Copy" function, which allows pasting of the retrieved information into any text or spreadsheet software. The current version consists of the following three parts:

(a) Data search: This is the main part of the software, which allows the user to construct queries in a visual manner with any combination of search parameters. The parameters include categories, measures (emissions, activity data, implied emission factors, etc.), gases, units, Parties, inventory and submission years, CRF tables and other search options;

(b) Submission information: General information on Parties' submissions (such as inventory years, tables and number of values provided);

(c) Trend tables: Generation of tables in a certain format (Parties in rows and inventory years in columns) with a given set of parameters. The tables allow the user to view time-series of emissions and activity data and to compare implied emission factors across Parties.

69. This software tool was used extensively during phase I and phase II of the synthesis and assessment of GHG inventories to extract implied emission factors, activity data and emissions data that were included in section I of the report. It was also used for making comparisons of various parameters across Parties and for making work on the identification of statistical irregularities in the submitted data easier (see paragraph 22).

III. FUTURE WORK

A. Review activities

70. During the second part of this calendar year, the secretariat is planning to finalize the following activities:

(a) Phase II of the synthesis and assessment of the GHG inventory submissions for the year 2001 with the assistance of experts from the UNFCCC roster of experts;

(b) Individual reviews of the 2001 GHG inventory submissions, without repeating those Parties that were reviewed during the first part of the year, through three desk reviews (six GHG inventories each), one centralized review (six GHG inventories) and four in-country reviews (Austria, Finland, France and Sweden having volunteered for such a review).

71. The total number of national experts who will be involved in the above activities is approximately 65 to 70, including one or two additional experts who have broader knowledge of all areas of the inventory process, for each review team. These experts will assume some of the additional tasks currently bestowed upon the lead authors (such as reviewing the NIR to determine a general assessment of its conformity with the UNFCCC reporting guidelines, and drafting the overview section of the review report) and will assist, when necessary, other members of the team with the review of their assigned sector.

72. The secretariat is preparing a framework for comparing the three types of individual reviews based on the experience gained so far with the different approaches for the individual review conducted during the first part of the year 2001, and in particular with the multiple reviews of the 2000 GHG inventories of Australia, the Netherlands, New Zealand and the United States of America. For this work, the comments that national experts, who participated in these reviews, provided to the secretariat through a questionnaire will be taken into account, as appropriate. It is anticipated that this framework will assist in the evaluation and assessment of the different individual review approaches and will facilitate the preparation of the report mentioned in paragraph 2 (d).

73. The preliminary guidance prepared for the individual reviews is currently under revision and a new version of it will become available in time for the individual reviews mentioned in paragraph 70 (b). The revised version will incorporate specific guidance, including a checklist for reviewing each IPCC sector (*Energy*, *Industrial Processes*, *Agriculture*, *Land-Use Change and Forestry* and *Waste*), and relevant elements from the IPCC good practice guidance. In addition, the guidance will be restructured in a later stage to provide, as appropriate, different sets of instructions for each of the three individual review approaches.

74. The secretariat will also revise the outline of the review report, based on experience gained during the review of the 2000 GHG inventory submissions and taking into account comments from the review team members.

B. Workshop

75. The secretariat is planning to organize a workshop on methodological and operational issues relating to the UNFCCC reporting and review guidelines in early December 2001. The secretariat will invite experts who participated in review activities relating to the 2000 and 2001 GHG inventory submissions. It is anticipated that the participants in the workshop will provide useful input to the further work on the technical review process and for possible revision of the UNFCCC review guidelines.

C. Software development

76. The secretariat will continue its efforts to improve the GHG database and the software tools it has developed. In particular, it will:

(a) Improve the existing CRF Excel software, taking into account Parties' comments and the secretariat's experience;

(b) Develop a new "stand alone" CRF software with a local database in order to incorporate necessary functions and abilities, which can not be implemented in the existing MS Excel software. The new software would also decrease the workload on Parties during compilation, and on the secretariat while uploading submissions into the database;

(c) Improve and further develop the GHG database and the existing software tools for automatizing, as far as possible, the initial checks of the GHG inventories and the preparation of the status reports;

(d) Improve the user-friendliness of the CRF data locator software by incorporating graphical capabilities and additional search and reporting capabilities;

(e) Incorporate datasets from external data sources (IEA, UN common database, etc.) in the GHG database to facilitate the review process;

(f) Develop software tools for facilitating the work of the review teams;

(g) Improve the presentation and accessibility of the GHG data submitted by Annex I Parties through improvements to the UNFCCC web site.

D. Training of experts

77. One of the key elements for a successful review process is the ability to involve highly qualified national experts at different stages of the work. Possible solutions to this issue have not been addressed in this note, but will be provided in the report of the secretariat after the end of the trial period.

E. Report to the SBI after the end of the trial period

78. In response to the mandate by the COP, the secretariat will prepare a report for the consideration of the SBI, as soon as practicable after the end of the trial period. This report will provide a comprehensive assessment of the trial period review, taking into account the experience gained during the years 2000 and 2001, the output of the workshop mentioned in paragraph 75, and views of Parties.

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